DOCUMENT RESUME

ED 170 057 PS 010 567

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TITLE The Development of Cognitive Mediation of Difficulty Level Preferences with Different Difficulty Cues.
PUB DATE Mar 79
NOTE 18p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (San Francisco, California, March 15-18, 1979)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Age Differences; *Cognitive Development; *Cognitive Processes; *Complexity Level; Elementary School Students; *Mediation Theory; Models; Research; Research Design

ABSTRACT

This study examines the development of children's preference for task difficulty levels. Subjects were 78 boys and 66 girls, aged 63 to 105 months. The sample was separated into older and younger groups. Within each age group, half the children of each sex were randomly assigned to one of two forms to test their level of aspiration. Subjects were shown three boxes which, they were told, contained puzzles. In Form I, numbers of children who could do each task (most, about half, only a few) were communicated to subjects orally and with reference to three color-coded cards, one placed on each box. In Form II, the tasks were described as "easy," "not easy or hard," or "hard." Cards with E, M, and H were placed on the boxes. Children's beliefs about the task on which it would be most impressive to succeed were elicited. Results indicate that young children prefer easy tasks under both the labeling and performance norm conditions. They do not understand that difficult tasks demand more ability than easy tasks nor that it is more impressive to succeed on difficult tasks. The abstractness of difficulty cues, rather than the cognitive demands of inferring difficulty and ability from performance norms, is said to account for young children's preference for easy tasks. The advantage of describing development in terms of maturity of cognitive mediators (understanding difficulty cues) rather than changes in overt behavior (difficulty level preferences) is emphasized. (Author/RH)

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The Development of Cognitive Mediation of Difficulty Level Preferences with Different Difficulty Cues

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PS010567

Paper presented at SRCD Meeting, San Francisco, March, 1979.

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Abstract

When task difficulty is communicated with performance norms, young children do not understand that difficult tasks demand more ability. Thus, unlike older children, they do not understand that it is more impressive to succeed on difficult than easy tasks nor do they prefer to attempt relatively difficult tasks. This study showed that understanding that difficult tasks demand more ability develops similarly for direct statements of difficulty (e.g., hard) and performance norms. This indicated that young children's preference for easy tasks is not a function of the complexity of performance norms and problems young children have inferring difficulty from norms. However, mature understanding of direct statements of difficulty level appears to be derived from understanding of performance norms. The advantages of describing development in terms of maturity of cognitive mediators of behavior (in this case, understanding of difficulty cues) rather than changes in overt behavior (in this case, difficulty level preferences) is emphasized. This approach enables distinguishing developmental levels from individual differences in behavioral tendency and analysis of both within one conceptual framework.

The Development of Cognitive Mediation of Difficulty Level Preferences with Different Difficulty Cues

According to attributional analysis of the development of achievement motivation, developmental changes in overt achievement behavior can be explained as reflections of changes in the cognitive mediators of that behavior (Nicholls, 1978; Ruble, Parsons, & Ross, 1976; Weiner & Kun, in press). That is, changes in the way children interpret tasks and performance outcomes mediate changes in behavior on tasks and in response to outcomes. One of the more dramatic age changes in achievement behavior occurs at about seven years. Below this age, almost all children select easy tasks when difficulty is communicated in the form of performance norms. Most older children, on the other hand, select normatively difficult or intermediate level tasks (Veroff, 1969).

This change can be explained in terms of the development of understanding that more difficult tasks require greater ability. Within the framework of attribution theory, a person's difficulty level preferences are held to reflect the attempt to demonstrate the highest possible ability level (Kukla, 1978). People generally select tasks of intermediate subjective difficulty level where the chances of demonstrating high ability are optimized. One possible explanation for young children's preference for easy tasks could be that they have low subjective probabilities of success. This hypothesis, however, is inconsistent with evidence of unrealistic optimism in young children (Nicholls, 1978, 1979; Parsons & Ruble, 1977; Ruble, Parsons, & Ross, 1976). Young children's preference for easy tasks is better seen as a consequence of their lack of understanding that normatively difficult tasks demand greater ability. Perception that success on normatively difficult tasks has greater incentive value and preference for difficult or intermediate tasks both develop along with the understanding that difficult tasks demand more ability (Nicholls, 1978). For older

children, norms indicate which tasks it is more impressive to succeed on: the difficult ones. Thus, provided they perceive their ability on the tasks as moderate or high, they will not choose easy tasks. For young children, the only function of norms may be to indicate where the chances of success are greatest. Thus, they prefer easy tasks.

Alternative interpretations, however, are possible. Firstly, young children's inability to infer difficulty from normative cues (Nicholls, 1978) may obscure their understanding of the relation between task difficulty and ability demanded. Secondly, normative cues could induce normative conformity (Kohlberg, 1969). Specifically, young children might infer that because more children succeed on one task than on others that this is the best or "right" task to do. These alternative explanations are accorded plausibility by the fact that young children do exhibit preference for moderate difficulty levels on tasks, like a ring-toss game, where difficulty levels are directly observable (Heckhausen, 1967; Sears & Levin, 1957).

In the present study, the development of children's understanding of and preference for different difficulty levels was examined when difficulty was communicated with norms versus with direct statements of difficulty, e.g., "hard". Direct statements require no inference of difficulty and could not induce normative conformity. Thus, identical results with the two types of cue would indicate rejection of the above alternative hypotheses.

The study also serves a more general purpose: to illustrate the advantages of defining maturity of motivation or personality in terms of maturity of the cognitive mediators of behavior rather than in terms of overt behavior alone. This enables one to encompass individual differences in behavioral tendency and maturity of the process mediating these tendencies within one conceptual framework. These points will be elaborated subsequently.

Method

Subjects

Subjects were 78 boys and 66 girls, aged 63 to 105 months attending a public school in a lower-middle-class suburb. Children enter school on turning five and move to more senior classes with their age-peers. For data analysis the group was separated into older and younger groups, randomly selected from three younger and three older classes. Mean age in months for the younger group was 71.26 (S.D. = 5.07) and for the older group 90.90 (S.D. = 6.23). Ages of the groups did not overlap.

Procedure

Testing was done individually by an adult male. Within each age-group, half of each sex were randomly assigned to one of two forms of level of aspiration measurement. In both, subjects were shown three small boxes which, they were told, contained puzzles. In the normative level of aspiration condition (Form I) numbers of children who could do each task were communicated to subjects orally and with reference to three cards, one placed on each box. Each card had 18 schematic faces drawn on it. One had 3 white and 15 yellow, one 9 white and 9 yellow, and one 15 white and 3 yellow. The color of the faces was used to indicate whether most, about half, or only a few children could do each puzzle.

In Form II, the tasks were described as "easy", "not easy or hard (a middle sort of one)", or "hard". Cards with "E", "M", and "H" were placed on the appropriate boxes and instructions were parallel to those for Form I. Fuller details of instructions are given in Nicholls (1978).

The moderate puzzle was always in the middle, but the left-right placement of the easy and difficult puzzles was alternated and the order of presentation of instructions for the different difficulty levels was counterbalanced. After presentation of instructions, a check was made to assess whether subjects remembered these correctly.

The following questions were then presented, order counterbalanced: (a) "Which puzzle would you have to be very clever to do?" (b) "If you could do all these puzzles (Experimenter points back and forth several times), which one would the teacher be most pleased you could do?" (c) "Which is the easiest puzzle?" (d) "Which is the hardest puzzle?" Question (b) was a measure of the incentive value of success. This question was used rather than a direct question as to which puzzle the child would be most pleased to be able to do, because the latter question could indicate the child's perceived ability or preferred difficulty level rather than belief about which task it would be most impressive to succeed on. Finally, subjects chose a puzzle to do.

Results and Discussion

Effects of age and test form on responses to questions and on level of aspiration choices were examined using the pairs approach (Light, 1973), which is applicable to three dimensional tables where one dimension is a response variable. Because this method produced rather conservative results, it was supplemented with Chi-Square tests. No sex differences were found so analyses involving sex are not reported.

For question (a) "Which puzzle would you have to be very clever to do?" The pairs analysis produced a marginal age effect, $H_R(4) = 9.00$, $p < .10$ whereas, a significant Chi-Square was obtained $\chi^2(2) = 14.18$, $p < .001$. A clear majority of the older, but not younger children selected the difficult task as the one that would require high ability. The two test forms were comparable on this question: The test and age x test effects were not significant according to either test. (See Table 1.)

This result indicates that normative cues *per se* do not obscure young children's understanding of the relation between task difficulty and ability required for success. Regardless of type of difficulty cue, a considerable

proportion of the younger children failed to choose the difficult task as the one demanding most ability.

Insert Table 1 about here

With the incentive value of success question there was a significant difference between responses to the two forms $H_C(4) = 18.26$ $p < .005$, and an age x form interaction, $H_E(2) = 17.60$ $p < .025$, (Table 1). Only the older children who were presented with Form II (without norms) consistently chose the most difficult task as the one having greatest incentive value of success. Their responses differed significantly from those of the young group on Form II, $\chi^2(2) = 8.91$, $p < .025$, the older group on Form I, $\chi^2(2) = 25.08$, $p < .001$, and the younger group on Form I, $\chi^2(2) = 20.29$, $p < .001$. Other comparisons produced nonsignificant values.

These results indicate that, as expected, most young children do not associate greater incentive value of success with more difficult tasks. Also, though normative information did not affect inferences about ability required, it did affect the perceived value of success. The failure of older children to see success as having most value on the difficult task when norms were used presumably resulted from normative conformity. The Form II results suggest that the older children are aware of the incentive value of success - task difficulty relationship. However, this relationship did not appear well enough established to counter the effect of the normative information (Form I) which, for these children, probably implied that the easy task was the most appropriate one to do. It is clear from Nicholls' (1978) evidence, that this effect of norms is developmentally short-lived.

For level of aspiration, or difficulty level choice (Table 1), the age effect approached significance, $H_R(4) = 8.52$, $p < .10$, and there was a significant

interaction, $H_I(2) = 8.36$, $p < .025$. Choices of older children on Form II differed significantly from those of the younger group, $\chi^2(2) = 9.98$, $p < .01$, the older group on Form I, $\chi^2(2) = 7.81$, $p < .025$, and the younger on Form I, $\chi^2(2) = 8.65$, $p < .025$. Other comparisons were not significant. These results closely parallel those for the incentive value question. Only the older children with Form II (no norms) consistently associated greater incentive value of success with the difficult task and chose either the moderate or the difficult task.

The similar results for responses to the incentive value question and task choices suggest that the age-increase in preference for moderate or difficult tasks emerges with development of the perception that more difficult tasks have greater incentive value of success. This suggestion is more directly supported by the finding, for Form II, of a significant ($p < .05$) association $\phi = .27$, between understanding that success on difficult tasks has greater incentive value and maturity of level of aspiration behavior (choice of moderate or difficult task was classified mature). For Form I, where relatively few subjects associated greatest value of success with the difficult task, level of aspiration choice was not significantly related to presence versus absence of perception of greater value of the difficult task, $\phi = .13$.

It should be noted that, among children who do associate greater incentive value of success with more difficult tasks, choice will reflect self-concept of ability. Thus, a high association between these responses would only occur if all subjects had high or moderately high self-concepts of ability. The above associations are lower than those reported by Nicholls (1978) with an upper-middle-class sample. It is likely that the present sample had lower self-concepts of ability. This could contribute to the lower associations.

Insert Table 2 about here

The data shown in Table 2 are relevant to the relations between development of perception that the difficult task requires more ability and that success on the difficult task has the greatest incentive value. There is no indication of asynchronous development with Form II. For the Form I section of Table 2, Wohlwill's (1973, p. 225) index of asynchrony, α, was .12 and ϕ was .13. These values satisfy Wohlwill's criterion ($2\alpha > \phi$) of asymetrical development. Thus, perception that success on the most difficult task is of greatest value tends to be well established after, rather than at the same time as understanding that difficult tasks require more ability.

The associations shown in Table 2 and those between task choice and belief that success on difficult tasks has greater incentive value are lower than those obtained by Nicholls (1978). This might be explained by the slightly narrower age-span in this present sample and the greater proportion of children close to the developmental transition points on these measures. Inclusion of more older and younger children would increase the proportions in the mature-mature and immature-immature cells.

Ability to infer task difficulty from normative information (Form I) was demonstrated by most children: 61% of the younger and 86% of the older children correctly identified both the easy and the difficult task. This makes it unlikely that many of the immature responses to the incentive value and ability required questions with Form I could be an artifact resulting from identification of either the easy or intermediate task as the difficult one and consequent selection of the same task as the one requiring most ability and having most incentive value. This conclusion is strengthened by the evidence that of the 19 (out of 72) subjects who did mis-identify the difficult task, only five also chose the same task as that requiring most ability and having most incentive value. This conclusion is, of course, also supported by the similar age-trend in inference of

ability required with Form II where misidentification of task difficulty was virtually impossible. Similar age-trends would not have occured if, on Form I, these inferences were primarily impared by incorrect inferences of task difficulty.

Conclusions

It has been shown that when concrete difficulty cues are available, young children prefer intermediate difficulty levels rather than tasks where success seems certain (Heckhausen, 1967; Sears & Levin, 1957; Young & Egeland, 1976). In this case, their behavior resembles that of older children and contrasts with their own when normative difficulty cues are used (Nicholls, 1978; Veroff, 1969). The present study suggests that young children's preference for normatively easy tasks is not merely a function of problems they encounter inferring difficulty and ability demanded from norms. Although normative conformity can affect choices, young children also prefer easy tasks when difficulty is communicated by means of the labels "easy" and "hard". Thus, the abstractness of difficulty cues, rather than the cognitive demands of inferring difficulty and ability from performance norms accounts for young children's preference for easy tasks.

However, it seems that a mature understanding of direct statements of difficulty like "hard" must be based on understanding of norms. Direct statements of difficulty are ambiguous in a sense that performance norms are not. Given an understanding of normative difficulty, direct statements of difficulty appear likely to be interpreted as normative difficulty statements; e.g., a task described as difficult would be seen as one that few people can do. This conclusion is consistent with the evidence of similar development of understanding of the ability required for success with both types of difficulty cue. The only plausible alternative interpretation of direct statements of difficulty level is in terms of probabilities of success for individual persons; e.g., a task described as difficult would be seen as one where failure is expected. In the absence of understanding of the full implications of norms, young

children appear to have only the second alternative available. Thus, if success implies some ability and failure does not (Kukla, 1978), they would have no reason to choose a difficult task (where failure is expected) and every reason to choose an easy one (where success is expected) when abstract difficulty cues are used.

The results of this study clarify the cognitive basis of the developmental change in difficulty level preferences observed by Veroff. Young children show a preference for intermediate subjective difficulty levels when difficulty levels are directly observable. This same tendency does not manifest itself with abstract difficulty cues until children are able to infer difficulty levels and ability required for success from performance norms. The understanding that the performance of others provides a basis for estimating one's own ability doubtless also occasions the increased interest in comparing own performance with others' that emerges at about the same age (Ruble, Feldman, & Boggiano, 1976).

Perhaps more important than these specific conclusions about the development of understanding of and preference for difficulty levels are some of the general features of the present approach to the analysis of behavioral development. In particular, the capacity to define developmental maturity (in this case, understanding of difficulty cues) independently of overt behavior (choice of difficulty level) offers a number of advantages. When change in overt behavior alone is used as evidence of personality or motivational development (e.g., Veroff, 1969; Weisz, 1978) the meaning of apparently immature behavior in older children can be obscure.

As shown here, most young children almost invariably choose easy tasks, but so do an appreciable proportion of older children. Should these older children be described as immature? The present approach indicates not and provides a basis for distinguishing immature from mature reasons for choice of easy tasks:

If children do understand that difficult tasks require more ability, choice of easy tasks will reflect low self-concepts of ability. If they do not understand difficulty cues, choice of easy tasks will not reflect self-concept of ability. That is, overt behavior may reflect individual differences that are orthogonal to developmental maturity or it may reflect level of maturity. Only when maturity is conceived independently of overt behavior can this distinction be made.

Consider, by way of illustration, the finding that retarded children (mental age seven) choose easy tasks more often than do normals of the same mental age (Harter & Zigler, 1974). It is not possible to tell whether the retarded children are immature in understanding of difficulty or whether they have low self-concepts of ability. Both explanations are plausible, but their implications are quite different. The same comments apply to the finding of greater preference for normatively easy tasks in blacks than whites in a combined first and fourth grade sample (Ruhland & Feld, 1977).

As Wohlwill (1973) observes, "By and large, the study of developmental change has remained divorced from the study of individual differences in behavior." (p. 45). Stage theories of personality and social development generally fail to deal with individual behavioral differences within levels of maturity (e.g., Kohlberg, 1969). Independent assessment of maturity of the cognitive mediators of behavior and of individual differences in behavioral tendency makes it possible to analyse individual differences and developmental change within one conceptual framework. Thus, this approach may be of value in the study of other aspects of personality and development.

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Table 1

Effects of Age and Task Difficulty on Numbers of Children Selecting Tasks as: (1) the one requiring most ability, (2) the one with greatest incentive value of success, and (3) the one they chose to attempt.

Age	Task Difficulty	Numbers Choosing Tasks as One Requiring Most Ability		Numbers choosing Tasks as one with greatest incentive value of success		Level of Aspiration: Numbers Choosing to Attempt Each Task	
		Form I (Norms)	Form II (No Norms)	Form I (Norms)	Form II (No Norms)	Form I (Norms)	Form II (No Norms)
Younger	Easy	12	8	18	12	20	24
	Moderate	9	10	7	5	8	7
	Difficult	15	18	11	19	8	5
Older	Easy	4	2	22	2	20	9
	Moderate	8	4	3	6	9	19
	Difficult	24	30	11	28	7	8

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Table 2

Relations Between Understanding that Difficult Tasks Require Greater Ability and Perception that Success on Difficult Tasks has Greater Incentive Value

Perception that Difficult Tasks have Greater Incentive Value	Perception that Difficult Tasks Require Greater Ability			
	FORM I (Norms)		FORM II (No Norms)	
	No	Yes	No	Yes
No	25	25	12	13
Yes	8	14	12	35

Note: Values are numbers of subjects giving evidence (yes), or not giving evidence (no) of understanding of these relationships.